

Investment Committee
Friday, March 10, 2023, 9:00 a.m.

Virtual Only

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AGENDA

- I. CALL TO ORDER AND ACCEPTANCE OF AGENDA
- II. ACCEPTANCE OF MINUTES (FEBRUARY 2022)
- III. INVESTMENT PERFORMANCE REVIEW – MR. ANDERSON, MR. CHIN, MR. POSCH
- IV. FIXED INCOME TRANSITION UPDATE – MR. CHIN
- V. INVESTMENT COMMITTEE CONTENT – MR. ANDERSON
- VI. LEGISLATIVE BILLS – MR. ANDERSON
- VII. DISCUSSION
- VIII. ADJOURNMENT

**STATE INVESTMENT BOARD
INVESTMENT COMMITTEE MEETING
MINUTES OF THE
FEBRUARY 10, 2023, MEETING**

MEMBERS PRESENT: Thomas Beadle, State Treasurer, Chair
Joseph Heringer, Trust Lands Commissioner, Vice Chair
Scott Anderson, CIO
Eric Chin, Deputy CIO
Dr. Prodosh Simlai, External Representative
Dr. Ruilin Tian, External Representative

STAFF PRESENT: Derek Dukart, Investment Officer
Rachel Kmetz, Accounting Mgr.
Missy Kopp, Exec. Assistant
George Moss, Sr. Investment Officer
Matt Posch, Sr. Investment Officer
Ryan Skor, CFO/COO
Jason Yu, Risk Officer

GUESTS: Alex Browning, Callan
Kodee Furst, 50 South Capital
Trey Hart, 50 South Capital
Perry Hopper, Callan
Members of the public

CALL TO ORDER:

Treasurer Beadle called the State Investment Board (SIB) Investment Committee (IC) meeting to order at 9:00 a.m. on Friday, February 10, 2023, at the Retirement and Investment Office (virtual host), 1600 E Century Ave., Bismarck, ND.

The following Investment Committee members were present representing a quorum, Mr. Anderson, Mr. Chin, Treasurer Beadle, Commissioner Heringer, Dr. Simlai, and Dr. Tian.

AGENDA:

The agenda was considered for the February 10, 2023, meeting.

IT WAS MOVED BY COMMISSIONER HERINGER AND SECONDED BY DR. SIMLAI AND CARRIED BY A VOICE VOTE TO APPROVE THE AGENDA FOR THE FEBRUARY 10, 2023, MEETING AS DISTRIBUTED.

AYES: COMMISSIONER HERINGER, MR. ANDERSON, DR. SIMLAI, DR. TIAN, MR. CHIN, AND TREASURER BEADLE

NAYS: NONE

MOTION CARRIED

MINUTES:

The minutes were considered for the January 13, 2022, meeting.

IT WAS MOVED BY MR. ANDERSON AND SECONDED BY MR. CHIN AND CARRIED BY A VOICE VOTE TO APPROVE THE MINUTES FOR THE JANUARY 13, 2023, MEETING AS DISTRIBUTED.

**AYES: DR. SIMLAI, COMMISSIONER HERINGER, MR. CHIN, DR. TIAN, MR. ANDERSON,
AND TREASURER BEADLE
NAYS: NONE
MOTION CARRIED**

LEGACY FUND OVERVIEW:

Mr. Anderson provided an overview of the Legacy Fund including a history of the fund, growth in net asset value, and transferable earnings to date. The Legacy Fund asset allocation is very diversified, and staff have held the allocation close to the target. Mr. Anderson discussed the impacts of in-state investing on the asset allocation of the fund and the status of the in-state project. There is a general consensus that the goals of 1425 are beneficial, but refinement of the statute can help to more effectively achieve those goals. A bill is currently pending that would set a 3.5% of market value spending rule, smaller equity allocation, and eliminate the infrastructure loan program. Committee discussion followed.

ND GROWTH FUND:

Ms. Furst and Mr. Hart, 50 South Capital, provided background and an update on the ND Growth Fund (NDGF). Ms. Furst reviewed the fund-of-funds overview, internal due diligence process, and investment process. The NDGF is building a diversified portfolio across vintage, sector, and strategy that is unified by a commitment to invest in ND entrepreneurs. As of February 7, 2022, the NDGF has \$100 million in committed capital. Ms. Furst provided background on the NDGF investment portfolio. Committee discussion followed.

COUNTRY RISK:

Mr. Anderson presented information on Country Risk including categories of risk, the challenges in determining country risk, and the risk in emerging markets. Mr. Anderson explained the differences between separately managed and comingled funds. Staff are working to move towards more separately managed funds. The investment program has just reached a scale where there are enough staff to manage and monitor country risk. Staff are developing a staged plan to monitor country risk. Mr. Anderson reviewed the challenges with acting on the analysis of country risk. Committee discussion followed.

LEGISLATIVE BILLS:

Mr. Anderson reviewed current legislative bills that could have an impact on the investment program. Most of the bills listed, have not changed since the January meeting. Staff has spent considerable time talking with legislators about all of the ESG related bills which could have a great impact on the investment program as written. Committee discussion followed.

With no further business to come before the Investment Committee, Treasurer Beadle adjourned the meeting at 11:43 a.m.

Prepared by:

Missy Kopp
Assistant to the Board



PERFORMANCE REVIEW

INVESTMENT STAFF
MARCH 10, 2023

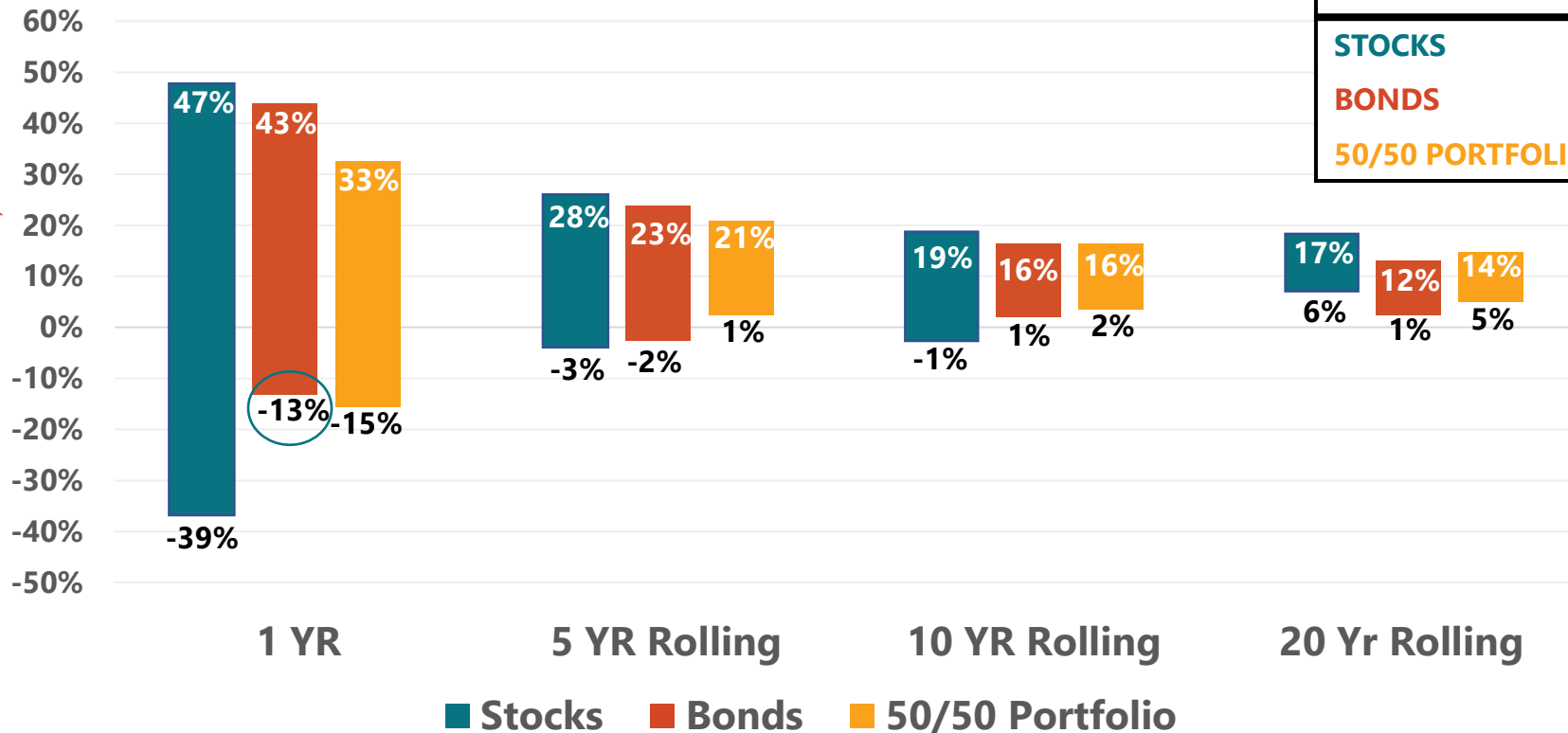
NORTH
Dakota
Be Legendary.

Retirement & Investment

TIME, DIVERSIFICATION AND UNCERTAINTY

RANGE OF STOCK, BOND AND BLENDED RETURNS¹

(Annual Total Returns, 1950 – 2021)



| | ANNUAL AVERAGE TOTAL RETURN |
|-----------------|-----------------------------|
| STOCKS | 11.1% |
| BONDS | 5.5% |
| 50/50 PORTFOLIO | 8.7% |

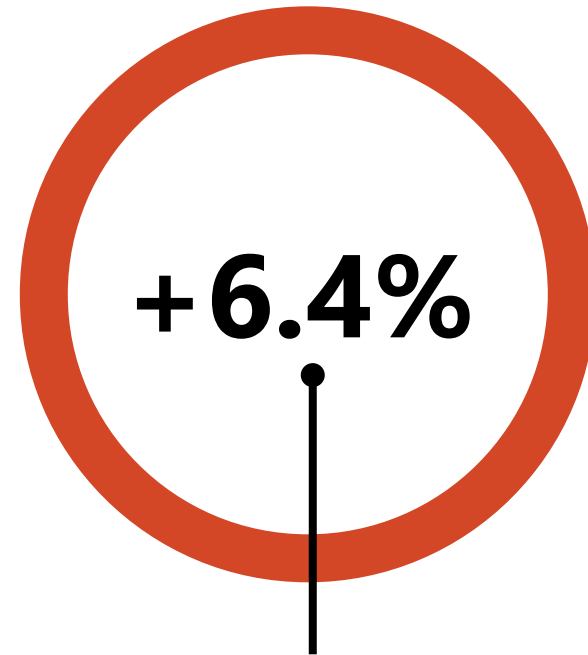
THE HIGHS AND LOWS ARE SLOW TO CHANGE!

1. JPM Guide to Markets – Factset, Bloomberg, Federal Reserve, Robert Shiller and Strategis/Ibbotson

HAS INFLATION PEAKED?¹



**ANNUAL INFLATION RATE
(JUNE 2021 THRU JUNE 2022)**

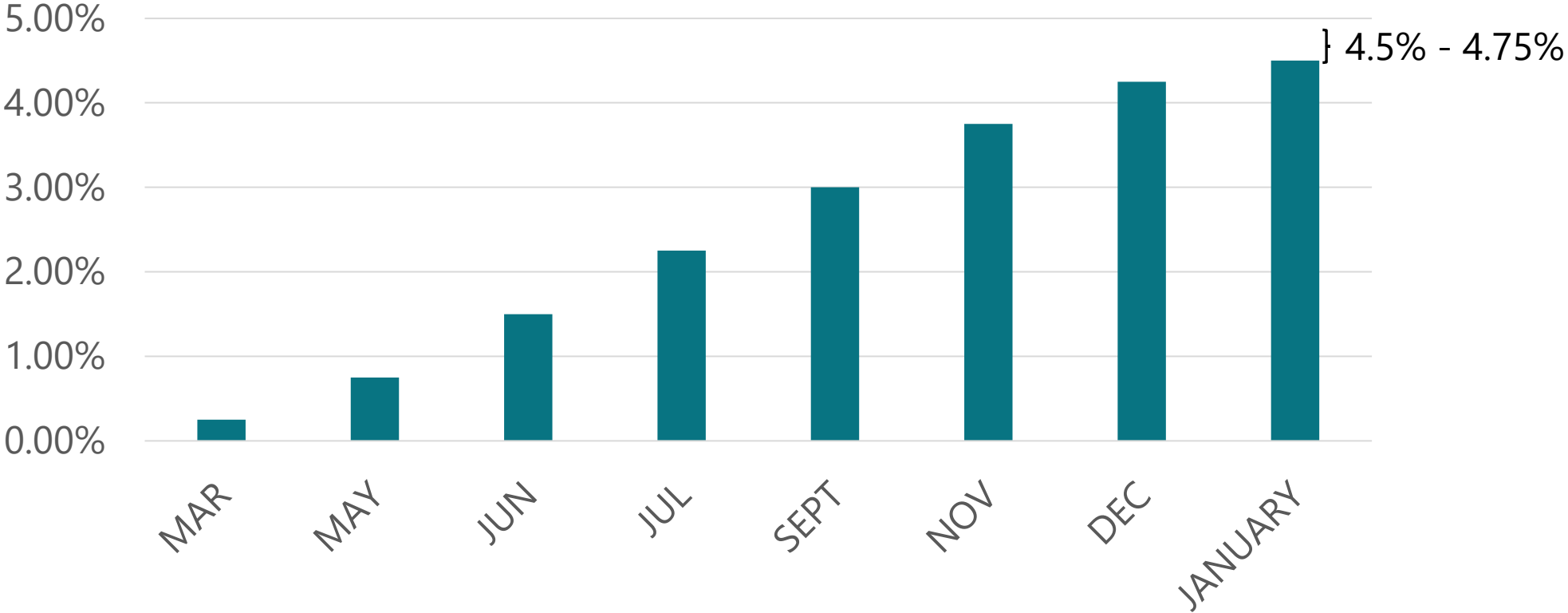


**ANNUAL INFLATION RATE
(JANUARY 2022 thru JANUARY 2023)
5.6% EX FOOD & ENERGY**

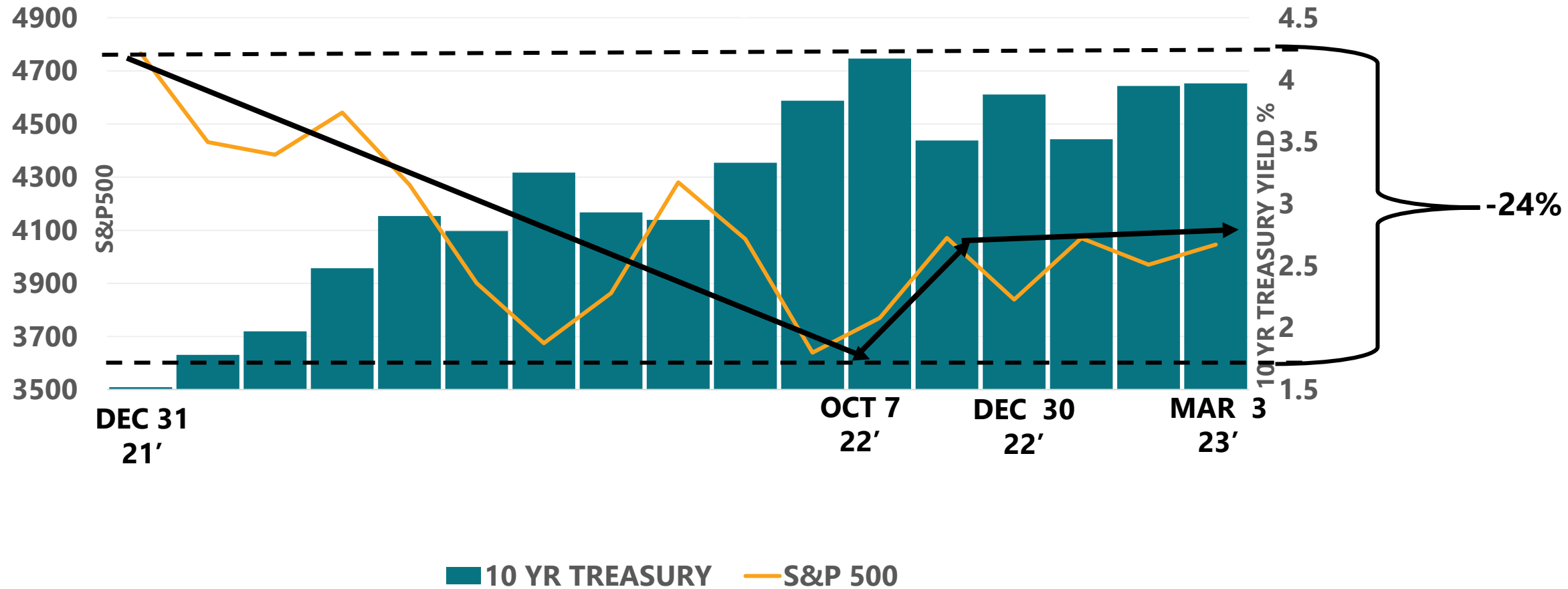
1. Bureau of Labor Statistics
Investment Team, Performance Review, March 10, 2023

FED RAISING RATES AGGRESSIVELY TO COOL ECONOMY

FED FUNDS RATE



THE S&P 500 HAS TRACKED DISCOUNT

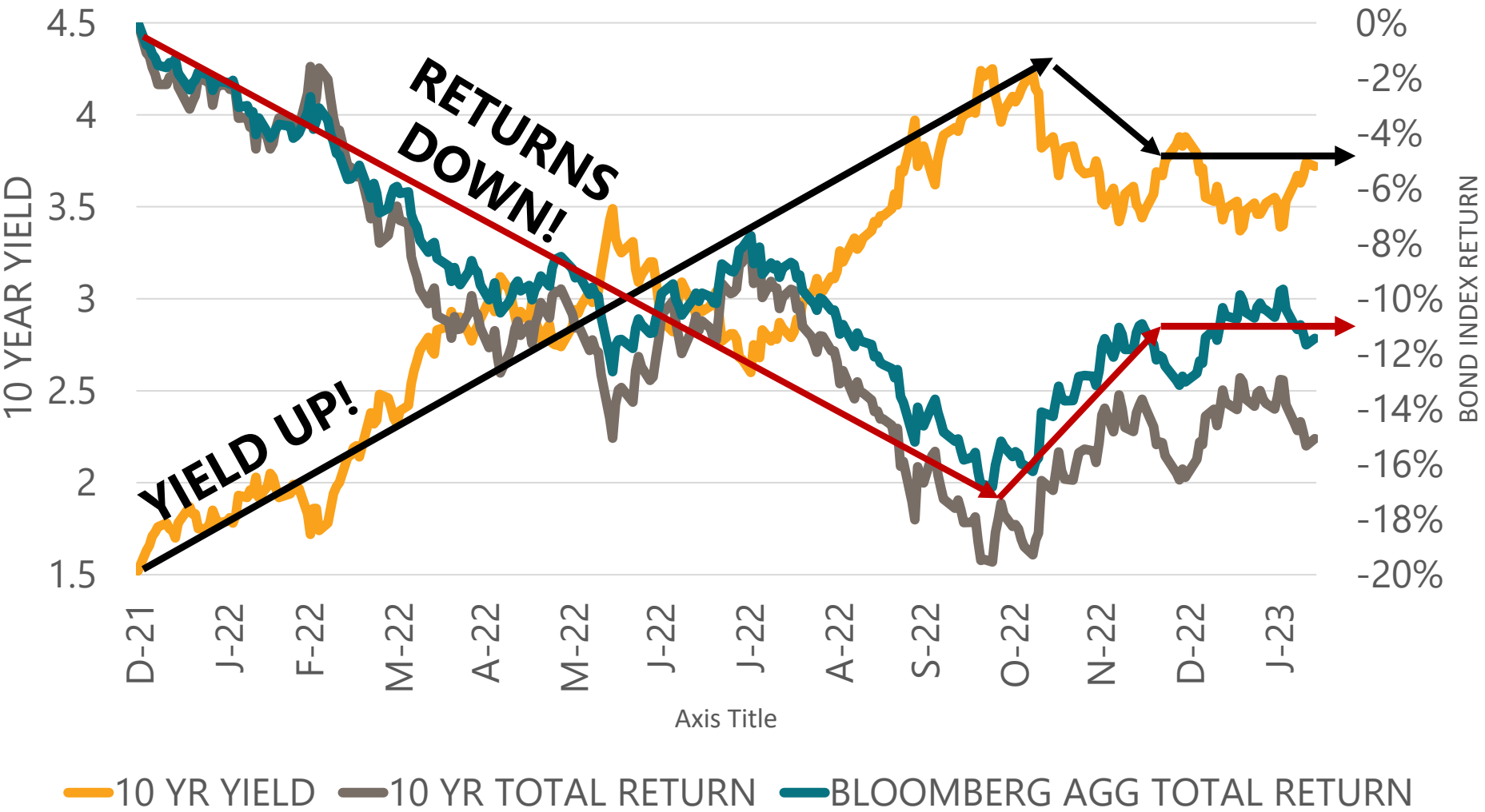


1. FRED (Federal Reserve Bank of St. Louis)

PERFORMANCE – BENCHMARK INDICES

| Summary of Returns | | | | | | |
|------------------------------------|------------|-------------|-------------|--------------|--------------|-------------------|
| December 31, 2022 | | | | | | |
| Benchmark Indices | | | | | | |
| (% change, annualized) | YTD | 1 Yr | 5 Yr | 10 Yr | 10 Yr | Volatility |
| Russell 1000 | -19.1% | -19.1% | 8.9% | 12.4% | 17.7% | |
| Russell 2000 | -20.4% | -20.4% | 3.9% | 9.0% | 22.2% | |
| S&P 500 | -18.1% | -18.1% | 9.2% | 12.6% | 17.6% | |
| MSCI ACWI IMI Net | -18.4% | -18.4% | 5.0% | 7.9% | 14.2% | |
| MSCI World ex US | -14.3% | -14.3% | 1.8% | 4.6% | 14.3% | |
| MSCI Emerging Markets | -20.1% | -20.1% | -1.4% | 1.4% | 15.7% | |
| Bloomberg Aggregate | -13.0% | -13.0% | 0.1% | 1.1% | 4.1% | |
| Bloomberg Gov/Credit | -13.6% | -13.6% | 0.3% | 1.2% | 4.5% | |
| Bloomberg US High Yield | -11.2% | -11.2% | 2.3% | 4.0% | 5.0% | |
| NCREIF Property Index (12/31/2022) | 5.5% | 5.5% | 7.5% | 8.81% | 3.2% | |

10 YEAR NOTE YIELD UP AND BOND RETURNS DOWN



GOOD NEWS ¹

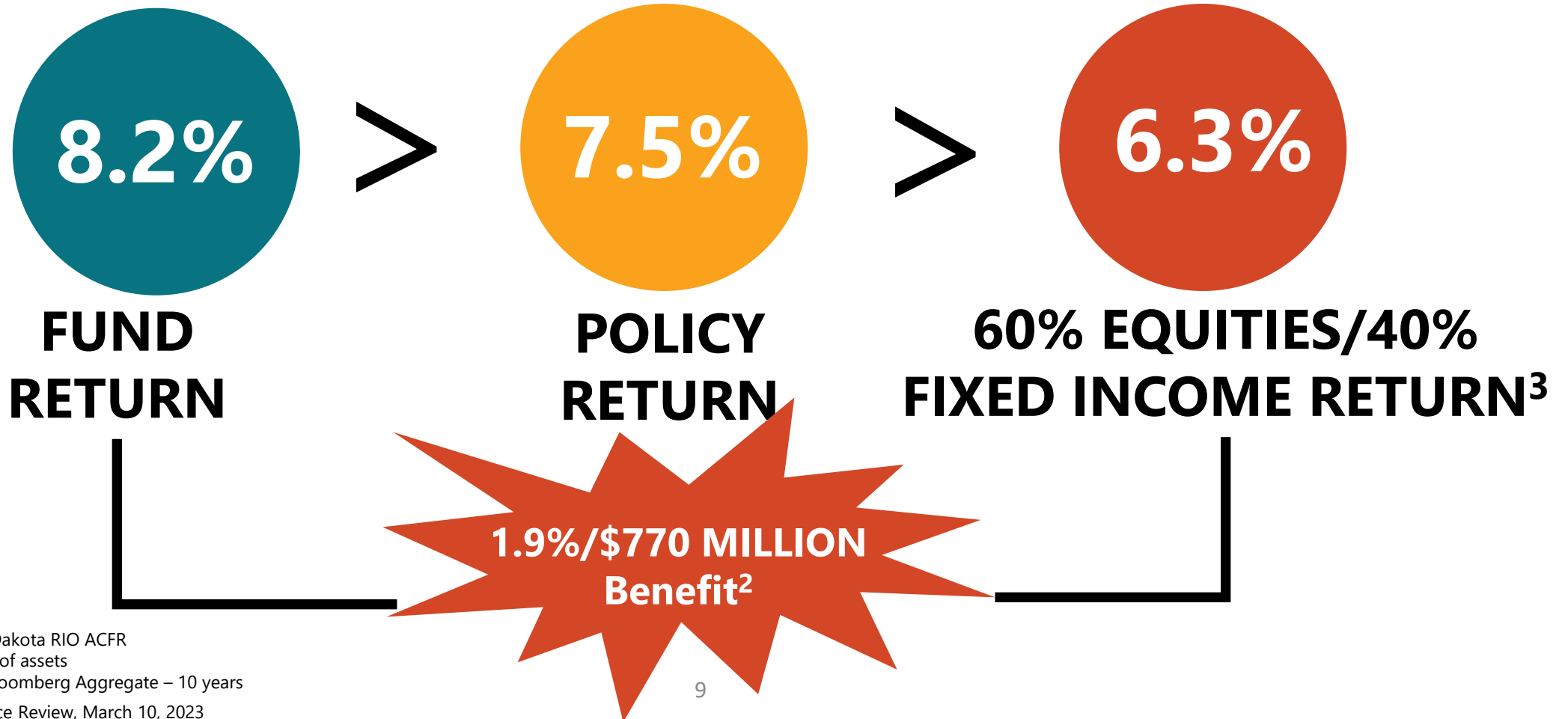
BLOOMBERG AGG YIELD¹: 4.9%



**BEST GUESS FOR
FUTURE BOND
RETURN!**

1. Fixed income benchmark; yields are the best estimate of future bond returns.

PERS TEN YEAR AVERAGE RETURN¹



1. Thru JUNE 2022; North Dakota RIO ACFR
2. Starting with \$3.8 Billion of assets
3. 60% MSCI World/40% Bloomberg Aggregate – 10 years
Investment Team, Performance Review, March 10, 2023

PERFORMANCE – PERS¹

AS OF DECEMBER 31, 2022

| PERS (\$3.8 BILLION) | YEAR TO DATE | 1 YEAR | 3 YEAR | 5 YEAR | RISK (5 YEAR) |
|------------------------------|---------------------|---------------|---------------|---------------|----------------------|
| TOTAL FUND RETURN | -10.9% | -10.9% | 5.3% | 5.7% | 10.2% |
| POLICY BENCHMARK | -10.7% | -10.7% | 5.1% | 5.7% | 10.2% |
| TOTAL RELATIVE RETURN | -0.2% | -0.2% | 0.2% | 0.0% | |

1. After fees performance

PERFORMANCE – PERS¹

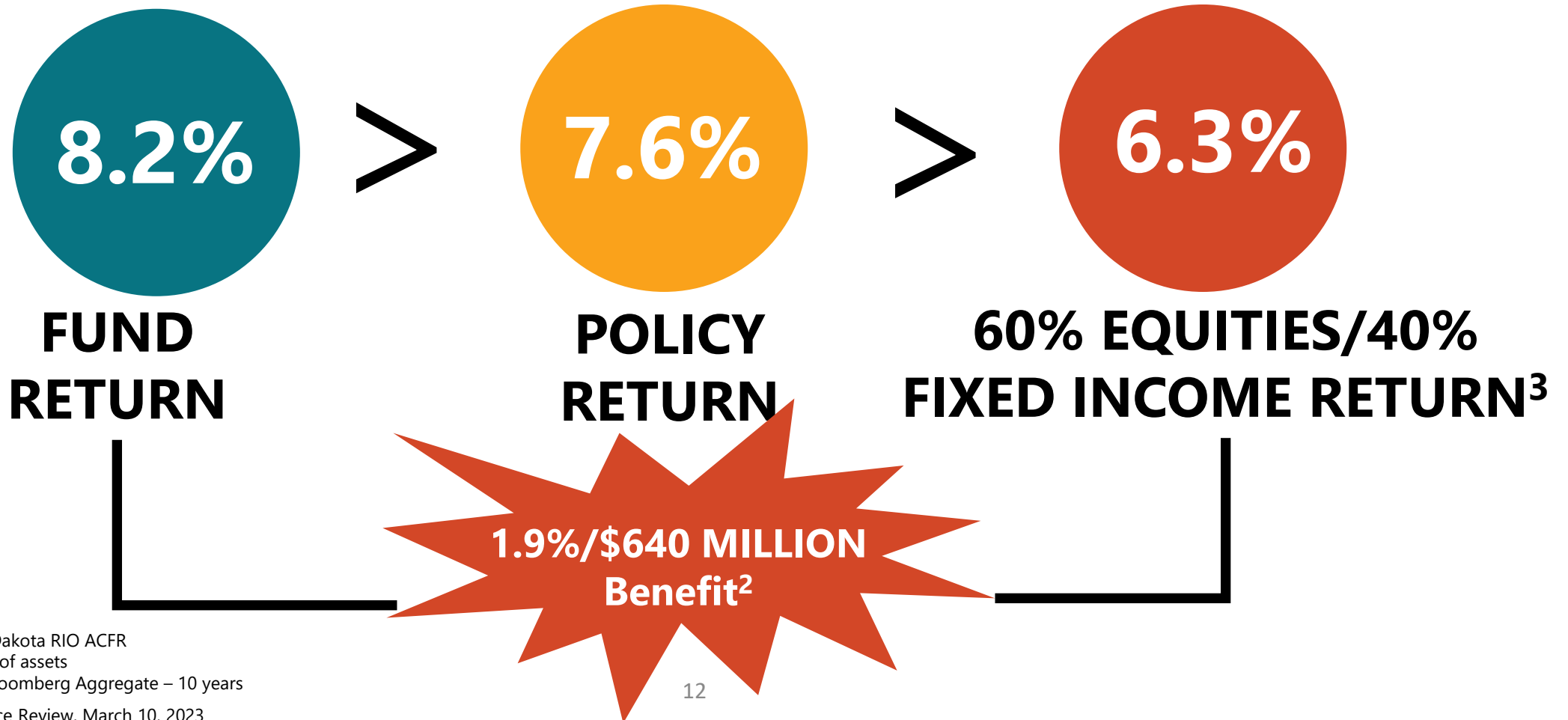
One Year Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|------------------------|-------------------------|-------------------------|-----------------|-----------------|----------------|------------------|-----------------------|
| Domestic Equities | 25% | 26% | (19.52%) | (19.32%) | (0.06%) | (0.42%) | (0.48%) |
| World Equities | 8% | 7% | (24.96%) | (27.74%) | 0.34% | 0.06% | 0.40% |
| International Equities | 16% | 18% | (19.37%) | (15.99%) | (0.60%) | 0.18% | (0.42%) |
| Private Equities | 8% | 7% | 0.27% | 0.27% | 0.00% | 0.03% | 0.03% |
| Domestic Fixed Income | 23% | 23% | (10.00%) | (12.40%) | 0.58% | (0.03%) | 0.55% |
| Real Estate | 13% | 11% | 11.05% | 5.53% | 0.58% | (0.04%) | 0.54% |
| Timber | 1% | 1% | (1.53%) | 12.90% | (0.15%) | (0.02%) | (0.17%) |
| Infrastructure | 5% | 7% | 6.66% | 7.91% | (0.04%) | (0.37%) | (0.41%) |
| Cash & Equivalents | 0% | 0% | 1.52% | 1.52% | 0.00% | 0.05% | 0.05% |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Total | | | (10.64%) | (10.72%) | + 0.65% | + (0.57%) | 0.08% |

Five Year Annualized Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|--------------------------|-------------------------|-------------------------|---------------|---------------|----------------|------------------|-----------------------|
| Domestic Equities | 24% | 22% | 9.62% | 8.10% | 0.34% | (0.04%) | 0.30% |
| World Equities | 14% | 13% | 1.35% | 3.53% | (0.38%) | (0.01%) | (0.39%) |
| International Equities | 16% | 16% | 1.84% | 1.00% | 0.13% | 0.00% | 0.13% |
| Private Equities | 5% | 7% | 14.85% | 14.85% | 0.00% | (0.13%) | (0.13%) |
| Domestic Fixed Income | 23% | 23% | 2.20% | 0.77% | 0.35% | (0.05%) | 0.30% |
| International Fixed Inc. | 0% | 0% | - | - | 0.01% | 0.01% | 0.02% |
| Real Estate | 11% | 11% | 8.81% | 7.46% | 0.16% | (0.06%) | 0.10% |
| Timber | 2% | 2% | 2.48% | 5.37% | (0.03%) | (0.02%) | (0.05%) |
| Infrastructure | 5% | 6% | 7.44% | 6.00% | 0.08% | (0.06%) | 0.02% |
| Cash & Equivalents | 0% | 0% | 1.26% | 1.26% | 0.00% | (0.00%) | (0.00%) |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Total | | | 5.97% | 5.69% | + 0.66% | + (0.38%) | 0.28% |

TFFR TEN YEAR AVERAGE RETURN¹



1. Thru JUNE 2022; North Dakota RIO ACFR
2. Starting with \$3.8 Billion of assets
3. 60% MSCI World/40% Bloomberg Aggregate – 10 years

PERFORMANCE – TFFR¹

AS OF DECEMBER 31, 2022

| TFFR (\$3.1 BILLION) | YEAR TO DATE | 1 YEAR | 3 YEAR | 5 YEAR | RISK (5 YEAR) |
|------------------------------|---------------------|---------------|---------------|---------------|----------------------|
| TOTAL FUND RETURN | -10.5% | -10.5% | 5.2% | 5.7% | 9.9% |
| POLICY BENCHMARK | -10.0% | -10.0% | 5.5% | 5.9% | 10.0% |
| TOTAL RELATIVE RETURN | -0.5% | -0.5% | -0.3% | -0.2% | |

1. After fees performance

PERFORMANCE – TFFR¹

One Year Relative Attribution Effects

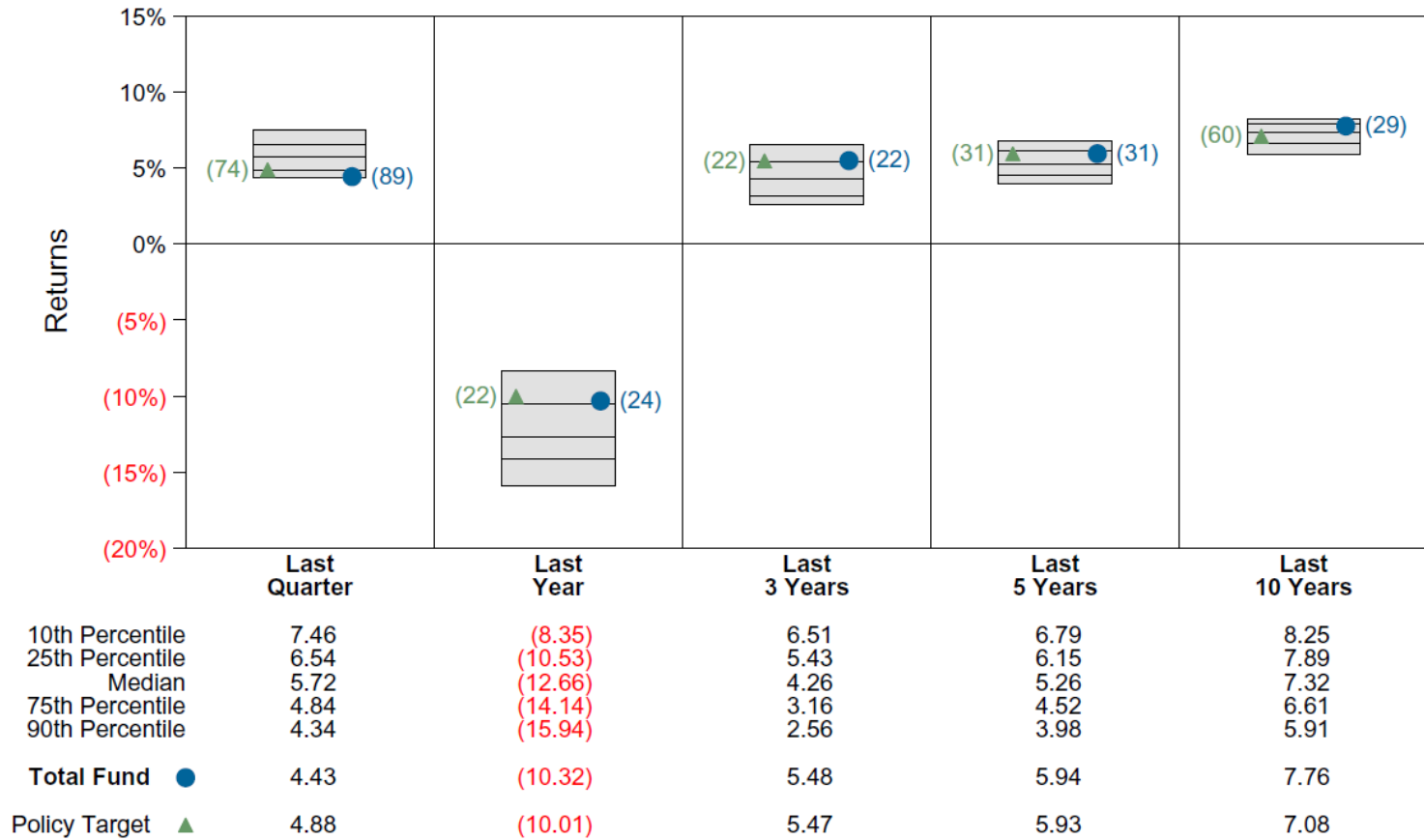
| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|------------------------|-------------------------|-------------------------|-----------------|-----------------|----------------|------------------|-----------------------|
| Domestic Equities | 23% | 23% | (19.52%) | (19.32%) | (0.06%) | (0.44%) | (0.50%) |
| World Equities | 8% | 7% | (25.07%) | (27.84%) | 0.33% | 0.09% | 0.42% |
| International Equities | 13% | 15% | (19.29%) | (15.99%) | (0.51%) | 0.07% | (0.45%) |
| Private Equities | 11% | 10% | 0.27% | 0.27% | 0.00% | 0.01% | 0.01% |
| Domestic Fixed Income | 26% | 26% | (10.67%) | (12.39%) | 0.48% | (0.04%) | 0.44% |
| Real Estate | 11% | 9% | 11.05% | 5.53% | 0.50% | 0.03% | 0.52% |
| Timber | 1% | 1% | (1.53%) | 12.90% | (0.17%) | (0.02%) | (0.19%) |
| Infrastructure | 5% | 8% | 6.67% | 7.91% | (0.04%) | (0.49%) | (0.52%) |
| Cash & Equivalents | 1% | 1% | 1.68% | 1.46% | 0.00% | (0.05%) | (0.05%) |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Total | | | (10.32%) | (10.01%) | + 0.54% | + (0.84%) | (0.31%) |

Five Year Annualized Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|--------------------------|-------------------------|-------------------------|---------------|---------------|----------------|------------------|-----------------------|
| Domestic Equities | 23% | 22% | 9.64% | 8.12% | 0.33% | (0.07%) | 0.25% |
| World Equities | 13% | 13% | 1.33% | 3.50% | (0.36%) | (0.00%) | (0.37%) |
| International Equities | 15% | 15% | 1.86% | 0.96% | 0.15% | (0.01%) | 0.14% |
| Private Equities | 6% | 8% | 14.85% | 14.85% | 0.00% | (0.32%) | (0.32%) |
| Domestic Fixed Income | 25% | 24% | 1.90% | 0.76% | 0.30% | (0.06%) | 0.24% |
| International Fixed Inc. | 0% | 0% | - | - | 0.01% | 0.01% | 0.02% |
| Real Estate | 10% | 10% | 8.81% | 7.46% | 0.14% | (0.04%) | 0.10% |
| Timber | 2% | 2% | 2.48% | 5.37% | (0.04%) | (0.02%) | (0.05%) |
| Infrastructure | 5% | 6% | 7.44% | 6.00% | 0.08% | (0.08%) | (0.00%) |
| Cash & Equivalents | 1% | 1% | 1.29% | 1.26% | 0.00% | (0.00%) | (0.00%) |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Total | | | 5.94% | 5.93% | + 0.61% | + (0.60%) | 0.00% |

PERFORMANCE – TFFR¹

Callan Public Fund Sponsor Database

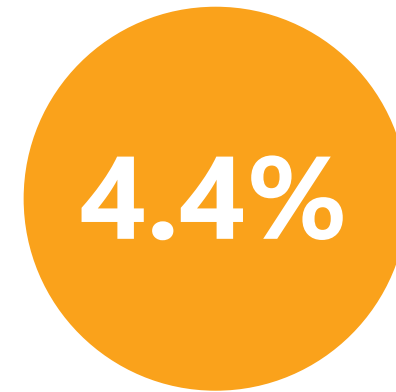


LEGACY TEN YEAR AVERAGE RETURN¹

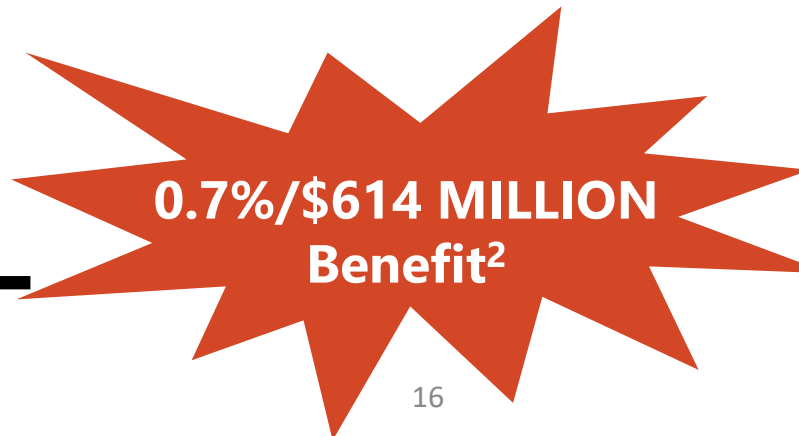


**FUND
RETURN**

>



**POLICY
RETURN**



1. Thru JUNE 2022; North Dakota RIO ACFR
2. Starting with \$8.5 Billion of assets
Investment Team, Performance Review, March 10, 2023

PERFORMANCE – LEGACY

AS OF DECEMBER 31, 2022

| LEGACY (\$8.5 BILLION) | YEAR TO DATE | 1 YEAR | 3 YEAR | 5 YEAR | RISK (5 YEAR) |
|-------------------------------|---------------------|---------------|---------------|---------------|----------------------|
| TOTAL FUND RETURN | -12.9% | -12.9% | 2.9% | 4.0% | 10.5% |
| POLICY BENCHMARK | -13.5% | -13.5% | 2.3% | 3.7% | 10.1% |
| TOTAL RELATIVE RETURN | 0.6% | 0.6% | 0.6% | 0.3% | |

1. After fees performance

PERFORMANCE – LEGACY

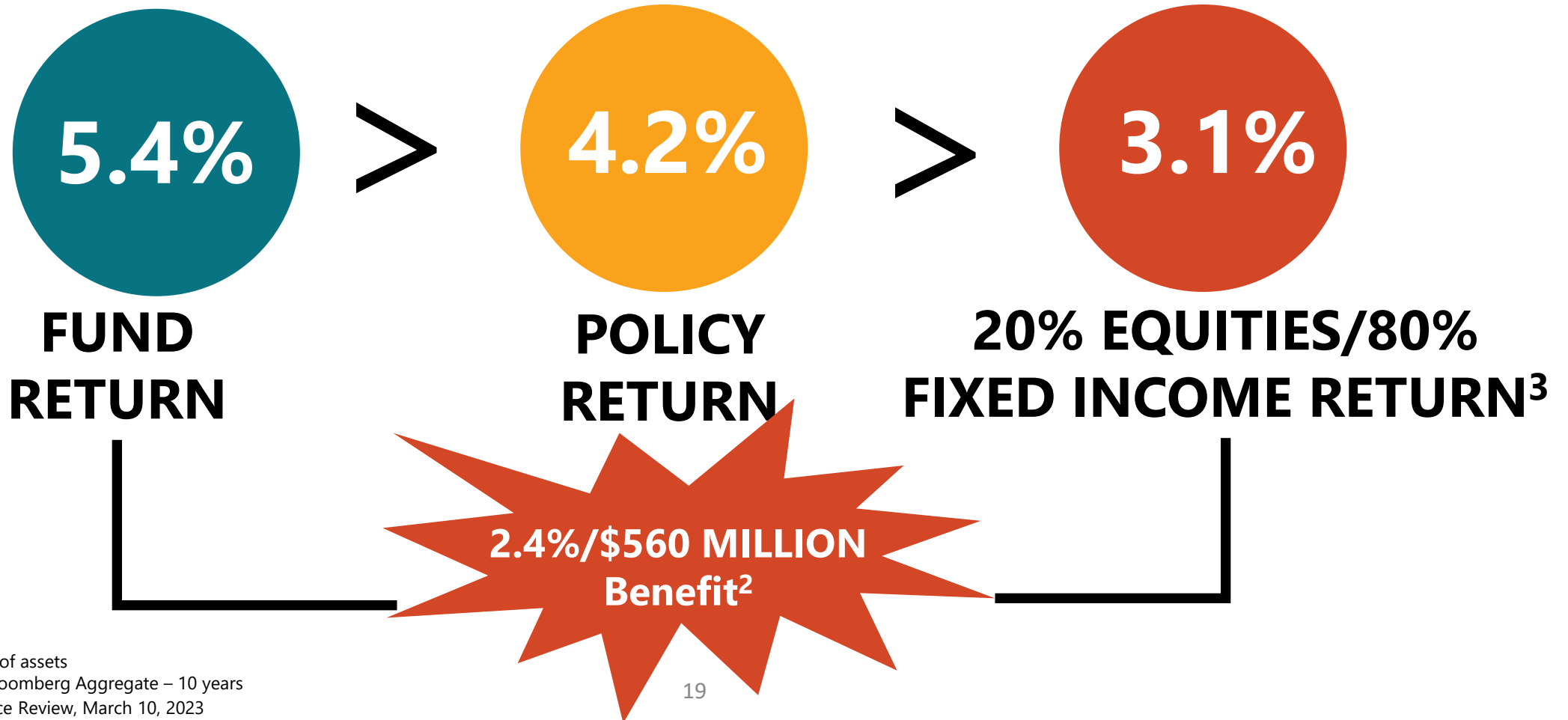
One Year Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|-------------------------|-------------------------|-------------------------|-----------------|-------------------|----------------|------------------|-----------------------|
| Large Cap | 23% | 23% | (17.89%) | (19.13%) | 0.30% | (0.15%) | 0.15% |
| Small Cap | 6% | 6% | (17.09%) | (20.44%) | 0.21% | 0.07% | 0.28% |
| International Equity | 19% | 20% | (19.26%) | (15.79%) | (0.69%) | 0.05% | (0.64%) |
| Private Equity | 1% | 1% | 0.85% | 0.85% | 0.00% | 0.06% | 0.06% |
| Domestic Fixed Income | 34% | 35% | (11.82%) | (13.01%) | 0.40% | (0.05%) | 0.35% |
| Diversified Real Assets | 10% | 10% | (3.56%) | (2.92%) | (0.06%) | 0.02% | (0.05%) |
| Real Estate | 6% | 5% | 20.97% | 5.53% | 0.66% | (0.12%) | 0.54% |
| Cash Equivalents | 1% | 0% | 1.42% | 1.42% | 0.00% | 0.15% | 0.15% |
| Transition Account | 0% | 0% | - | - | 0.00% | (0.01%) | (0.01%) |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Total | | | (12.70%) | = (13.53%) | + 0.80% | + 0.03% | 0.82% |

Five Year Annualized Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|-------------------------|-------------------------|-------------------------|---------------|----------------|----------------|------------------|-----------------------|
| Large Cap | 22% | 22% | 9.25% | 9.13% | 0.04% | (0.06%) | (0.02%) |
| Small Cap | 8% | 8% | 3.10% | 4.13% | (0.12%) | 0.00% | (0.12%) |
| International Equity | 20% | 20% | 1.58% | 1.43% | 0.06% | 0.03% | 0.08% |
| Private Equity | 0% | 0% | - | - | 0.00% | 0.01% | 0.01% |
| Domestic Fixed Income | 35% | 35% | 1.31% | 0.02% | 0.41% | (0.01%) | 0.40% |
| Diversified Real Assets | 10% | 10% | 4.49% | 3.71% | 0.07% | (0.00%) | 0.07% |
| Real Estate | 5% | 5% | 9.17% | 7.46% | 0.10% | (0.03%) | 0.07% |
| Cash & Equivalents | 1% | 0% | 1.14% | 1.14% | 0.00% | (0.02%) | (0.02%) |
| Transition Account | 0% | 0% | - | - | 0.00% | (0.00%) | (0.00%) |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Total | | | 4.22% | = 3.75% | + 0.55% | + (0.08%) | 0.47% |

WSI TEN YEAR AVERAGE RETURN¹



1. Thru JUNE 2022
2. Starting with \$2.1 Billion of assets
3. 20% MSCI World/80% Bloomberg Aggregate – 10 years
Investment Team, Performance Review, March 10, 2023

PERFORMANCE – WSI

AS OF DECEMBER 31, 2022

| LEGACY (\$2.0 BILLION) | YEAR TO DATE | 1 YEAR | 3 YEAR | 5 YEAR | RISK (5 YEAR) |
|-------------------------------|---------------------|---------------|---------------|---------------|----------------------|
| TOTAL FUND RETURN | -12.2% | -12.2% | 0.6% | 2.6% | 6.8% |
| POLICY BENCHMARK | -12.1% | -12.1% | 0.5% | 2.3% | 6.2% |
| TOTAL RELATIVE RETURN | -0.1% | -0.1% | 0.2% | 0.3% | |

1. After fees performance

PERFORMANCE – WSI

One Year Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|--------------------------|-------------------------|-------------------------|-----------------|-----------------|----------------|------------------|-----------------------|
| Large Cap | 10% | 11% | (18.18%) | (19.13%) | 0.09% | 0.04% | 0.13% |
| Small Cap | 2% | 2% | (17.16%) | (20.44%) | 0.05% | 0.10% | 0.14% |
| International Equity | 7% | 8% | (18.07%) | (15.79%) | (0.19%) | (0.03%) | (0.22%) |
| Domestic Fixed Income | 62% | 46% | (13.67%) | (12.75%) | (0.58%) | (0.55%) | (1.13%) |
| Diversified Real Assets | 12% | 12% | (7.07%) | (5.19%) | (0.22%) | 0.02% | (0.20%) |
| Real Estate | 6% | 5% | 20.63% | 5.53% | 0.67% | (0.01%) | 0.66% |
| Cash & Equivalents | 1% | 1% | 1.42% | 1.46% | (0.00%) | (0.00%) | (0.00%) |
| Global Equity Transition | 0% | 0% | - | - | 0.00% | (0.00%) | (0.00%) |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Domestic Fixed | 0% | 15% | - | - | 0.00% | 0.64% | 0.64% |
| Total | | | (12.11%) | (12.13%) | (0.19%) | 0.21% | 0.02% |

Five Year Annualized Relative Attribution Effects

| Asset Class | Effective Actual Weight | Effective Target Weight | Actual Return | Target Return | Manager Effect | Asset Allocation | Total Relative Return |
|--------------------------|-------------------------|-------------------------|---------------|---------------|----------------|------------------|-----------------------|
| Large Cap | 11% | 11% | 9.34% | 9.13% | 0.02% | (0.00%) | 0.02% |
| Small Cap | 3% | 3% | 2.76% | 4.13% | (0.07%) | 0.03% | (0.04%) |
| International Equity | 8% | 8% | 1.78% | 1.43% | 0.04% | (0.01%) | 0.03% |
| Domestic Fixed Income | 60% | 56% | 0.76% | 0.08% | 0.37% | (0.14%) | 0.24% |
| Diversified Real Assets | 12% | 12% | 3.14% | 3.17% | (0.00%) | (0.00%) | (0.00%) |
| Real Estate | 5% | 5% | 9.16% | 7.46% | 0.11% | 0.01% | 0.12% |
| Cash & Equivalents | 1% | 1% | 1.15% | 1.26% | (0.00%) | (0.00%) | (0.00%) |
| Global Equity Transition | 0% | 0% | - | - | 0.00% | (0.00%) | (0.00%) |
| Residual Holdings | 0% | 0% | - | - | 0.00% | 0.00% | 0.00% |
| Domestic Fixed | 0% | 3% | - | - | 0.00% | 0.15% | 0.15% |
| Total | | | 2.81% | 2.31% | 0.48% | 0.03% | 0.50% |

ONE YEAR CONTRIBUTION TO EQUITY ACTIVE RETURN

| | 1 YR PORTFOLIO RETURN | 1 YR POLICY RETURN | 1 YR ACTIVE RETURN | 5 YR PORTFOLIO RETURN | 5 YR POLICY RETURN | 5 YR ACTIVE RETURN |
|---|--------------------------|-----------------------|-----------------------|--------------------------|-----------------------|-----------------------|
| PERS PUBLIC EQUITY | -18.84% | -17.90% | -0.94% | | | |
| **World Equity - MSCI World | -17.9% | -19.63% | 1.73% | 2.8% | 5.30% | -2.52% |
| Epoch Global Choice | -20.12% | -19.63% | -0.49% | 3.28% | 5.30% | -2.02% |
| LSV Global Value Equity | -16.36% | -19.63% | 3.27% | 2.24% | 5.30% | -3.06% |
| <i>**World Equity Periods Ending 9/30/2022</i> | | | | | | |
| Domestic Equity | -19.76% | -19.29% | -0.47% | 9.40% | 8.43% | 0.97% |
| Large Cap - Russell 1000 | -20.40% | -19.13% | -1.27% | 10.61% | 9.13% | 1.47% |
| LA Capital Large Cap Growth | -27.49% | -19.13% | -8.36% | 11.67% | 9.13% | 2.54% |
| LA Capital 60% Large Cap/40% Large Cap Active Extension | -18.23% | -19.13% | 0.90% | 9.65% | 9.13% | 0.52% |
| NTAM - Quant Enhanced | -15.69% | -19.13% | 3.43% | 8.31% | 9.13% | -0.82% |
| Parametric/Clifton Group Enhanced | -19.84% | -19.13% | -0.71% | 8.89% | 9.13% | -0.24% |
| Small Cap - Russell 2000 | -16.77% | -20.44% | 3.67% | 5.22% | 4.13% | 1.09% |
| Atlanta Capital Small Cap Equity Fund | -12.12% | -20.44% | 8.32% | 8.39% | 4.13% | 4.26% |
| Riverbridge Small Cap Growth | -32.09% | -20.44% | -11.65% | | | |
| Sycamore Small Cap Value | -6.91% | -20.44% | 13.53% | | | |
| International Equity | -19.59% | -16.58% | -3.01% | 1.59% | 0.85% | 0.74% |
| **Total Intl All Cap - MSCI ACWI ex-US IMI | | | | | | |
| William Blair International Leaders | -28.09% | -16.58% | -11.51% | 3.55% | 0.85% | 2.71% |
| Arrowstreet International Equity | -7.50% | -16.58% | 9.08% | | | |
| **Total Dev. Intl Small Cap - MSCI World ex-US Small | | | | | | |
| DFA Intl. Small Cap Value Portfolio | -9.78% | -20.59% | 10.80% | -0.44% | 0.45% | -0.89% |
| Wellington International Small Cap Opportunities | -21.38% | -20.59% | -0.79% | -1.43% | 0.45% | -1.88% |
| Emerging Markets - MSCI EM | -26.71% | -20.09% | -6.62% | -1.25% | -1.39% | 0.15% |
| Axiom Emerging Markets Equity Fund | -30.83% | -20.09% | -10.74% | -2.15% | -1.39% | -0.76% |
| DFA Emerging Markets Small Cap Portfolio | -15.29% | -20.09% | 4.80% | 0.91% | -1.39% | 2.30% |

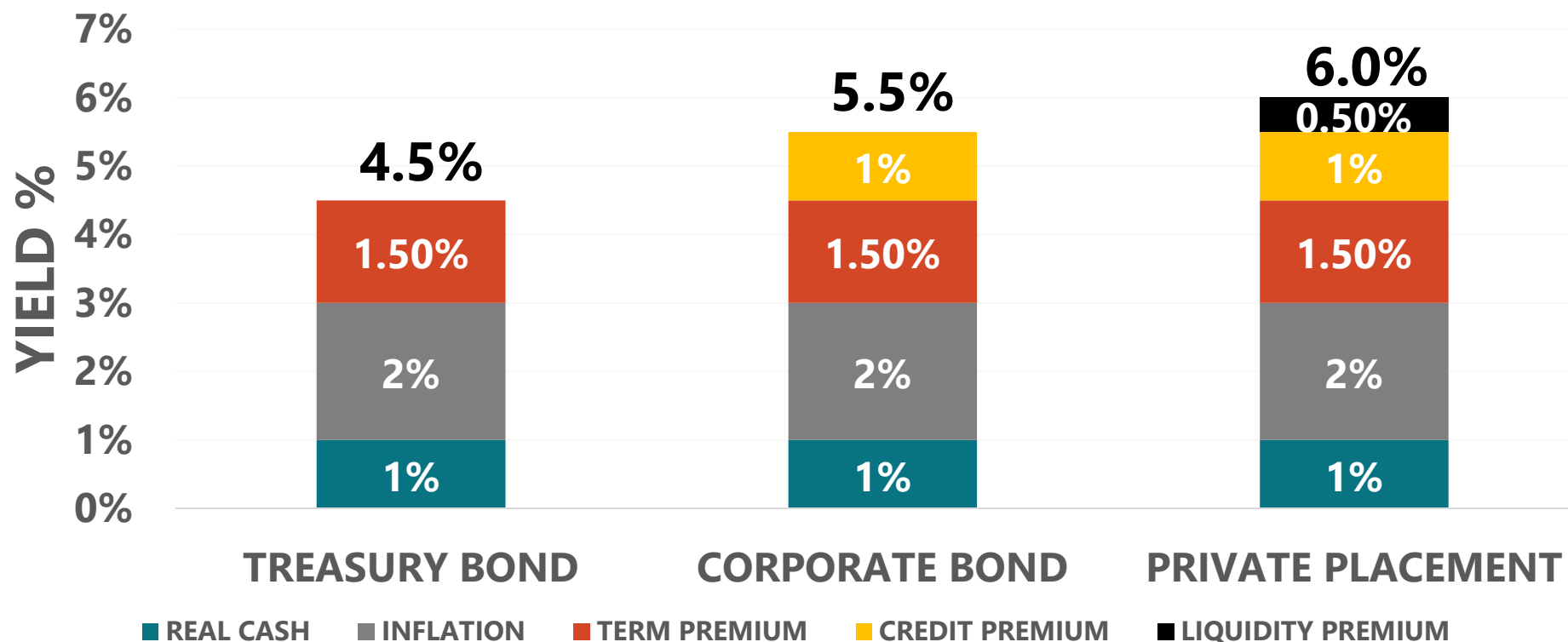
EQUITY PORTFOLIO RISK¹

| (IN BP UNITS) PORTFOLIO/RISK FACTOR | FACTOR EXPOSURE | | | STANDALONE RISK | | | RISK CONTRIBUTION | | | FACTOR RETURN |
|--|-----------------|-----------|--------|-----------------|--------------|------------|-------------------|--------------|------------|---------------|
| | PORTFOLIO | BENCHMARK | ACTIVE | PORTFOLIO | BENCHMARK | ACTIVE | PORTFOLIO | BENCHMARK | ACTIVE | |
| PENSION PUBLIC EQUITY | | | | 1,700 | 1,934 | 291 | 1,700 | 1,934 | 291 | |
| EQUITY | | | | 1,587 | 1,742 | 197 | 1,580 | 1,725 | 183 | |
| WRLD STYLE | 1.6 | 1.7 | -0.2 | 1,447 | 1,644 | 202 | 1,415 | 1,607 | 166 | 132 |
| MARKET | 0.9 | 1.0 | -0.1 | 1,409 | 1,602 | 193 | 1,368 | 1,554 | 150 | 90.1 |
| SIZE | 0.8 | 1.0 | -0.2 | 149 | 188 | 40 | 77 | 99 | 19 | 40.4 |
| VOLATILITY | -0.1 | -0.2 | 0.1 | 94 | 131 | 37 | -77 | -108 | -25 | -5.3 |
| MOMENTUM | 0.1 | 0.1 | 0.0 | 54 | 40 | 14 | -24 | -19 | 7 | 3.8 |
| REVERSAL | 0.0 | 0.0 | 0.0 | 3 | 13 | 10 | 2 | 8 | 4 | -0.1 |
| LIQUIDITY | 0.3 | 0.3 | 0.0 | 58 | 68 | 9 | 38 | 44 | 5 | 2.5 |
| SMALLCAP | -0.1 | -0.1 | 0.0 | 27 | 32 | 5 | 13 | 15 | 2 | -1.1 |
| VALUE | -0.3 | -0.3 | 0.0 | 64 | 69 | 5 | 16 | 18 | 1 | -3.1 |
| PROFITABILITY | 0.3 | 0.2 | 0.1 | 71 | 52 | 19 | 3 | 1 | 2 | 6.7 |
| EARNINGS YIELD | 0.0 | -0.1 | 0.0 | 4 | 10 | 6 | -1 | -1 | -1 | 0.2 |
| DIVIDEND YIELD | -0.2 | -0.1 | -0.1 | 23 | 15 | 8 | 5 | 3 | 1 | -0.9 |
| GROWTH | 0.0 | -0.1 | 0.0 | 6 | 14 | 8 | -2 | -4 | -1 | 0.0 |
| LEVERAGE | 0.0 | 0.0 | 0.0 | 1 | 5 | 6 | 0 | -1 | 0 | -0.1 |
| SENTIMENT | 0.0 | 0.0 | 0.0 | 3 | 4 | 1 | 0 | 0 | 0 | 0.2 |
| EMERGING | 0.0 | 0.0 | 0.0 | 11 | 7 | 4 | -3 | -2 | 1 | -1.0 |
| OIL | -0.1 | -0.1 | 0.0 | 9 | 12 | 3 | 0 | -1 | 0 | -0.2 |
| WRLD COUNTRY | | | | 333 | 297 | 82 | 151 | 124 | 18 | -11.8 |
| WRLD SECTOR | | | | 66 | 58 | 44 | 8 | -12 | -10 | 1.1 |
| FOREIGN EXCHANGE | | | | 193 | 321 | 132 | 117 | 210 | 111 | 0.0 |

BOND YIELDS COMPENSATE RISKS

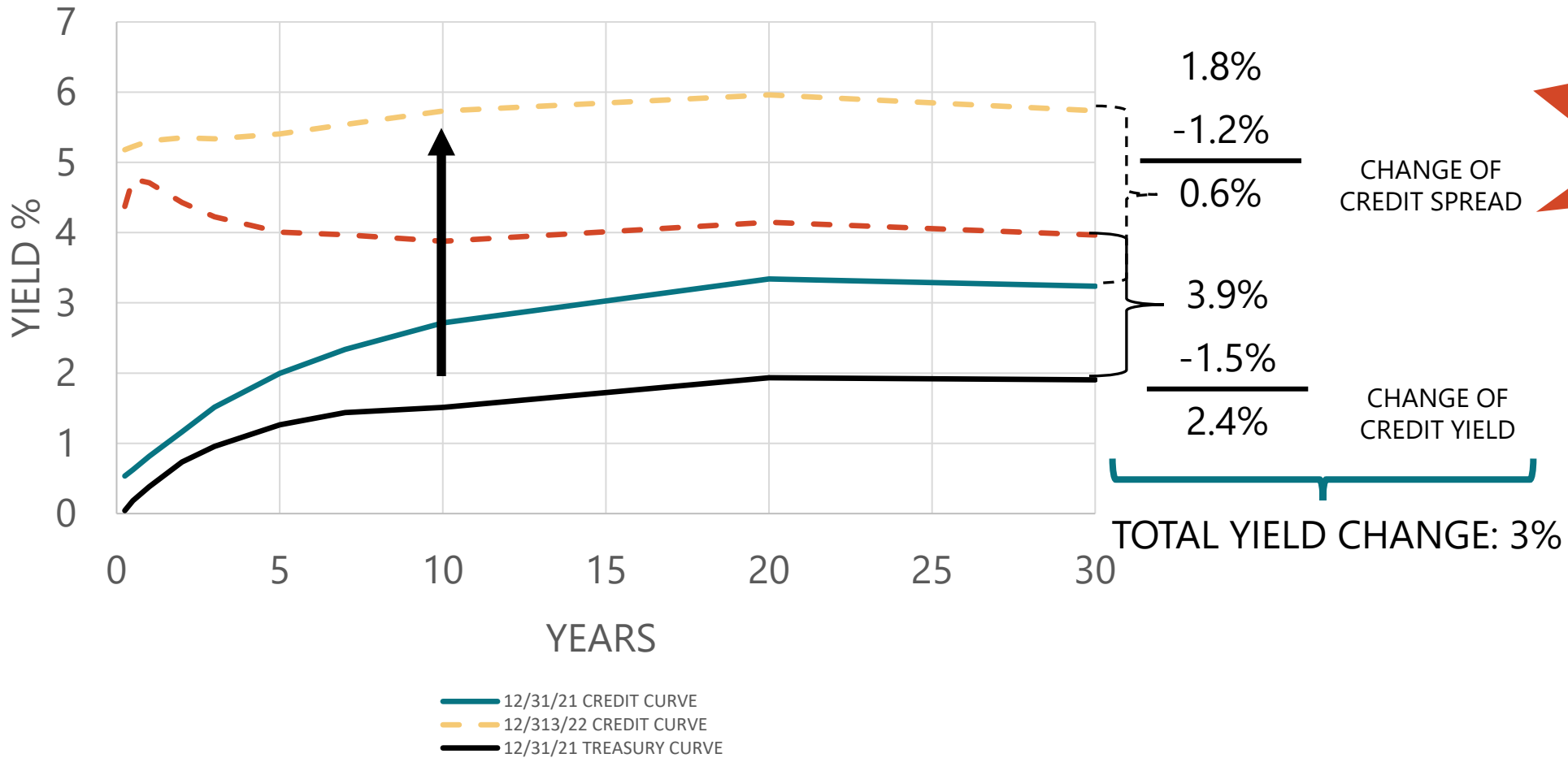
COMPONENTS OF BOND YIELDS

Illustration



CHANGE OF CREDIT AND TREASURY YIELDS DRIVE RISK¹

YIELD CHANGE 12/31/21 TO 12/31/22



FIXED INCOME RISK AND RETURN

FYTD PUBLIC FIXED INCOME RETURN¹

| (IN BASIS POINTS) | EXPOSURE (DURATION) | MARKET CHANGE | RETURN IMPACT |
|------------------------|------------------------|------------------|------------------|
| SHORT RATES | 1.0 | 176 | -176 |
| MEDIUM RATES | 2.7 | 92 | -248 |
| LONG RATES | 2.0 | 80 | -160 |
| TOTAL | 5.7 | | -584 |
| SPREAD (OAS) | 4.9 | -33 | 162 |
| VOLATILITY | 1.2 | 9 | -14 |
| YIELD | 0.5 | 588 | 294 |
| TOTAL PORTFOLIO RETURN | | | -129 |
| LESS BENCHMARK RETURN | | | -102 |
| FYTD TOTAL RETURN | | | -27 |



$$\frac{\text{EXPOSURE} \times \text{MARKET CHANGE}}{\text{CHANGE OF YIELD}}$$

X -1.0

CHANGE OF PORTFOLIO VALUE

SEPTEMBER PUBLIC FIXED INCOME RISKS¹

| DESCRIPTION | CREDIT | KEY RATE DURATION | | | | SPREAD | | | |
|-------------------------------|--------|-------------------|-------|--------|-------|--------|------|----------|-------|
| | RATING | DURATION | SHORT | MEDIUM | LONG | YIELD | OAS | DURATION | RISK |
| BLOOMBERG AGGREGATE BENCHMARK | AA- | 6.3 | 1.0 | 2.7 | 2.7 | 4.6 | 43 | 3.9 | 670 |
| PENSION INVESTMENT GRADE | A+ | (0.7) | (0.1) | (0.3) | (0.2) | 0.9 | 98 | 1.0 | 552 |
| MANULIFE TOTAL RETURN | A | (5.3) | (1.1) | (1.9) | (2.3) | 1.5 | 240 | 0.4 | 167 |
| STATE STREET LONG TREASURY | AA+ | 9.9 | (0.7) | (1.1) | 11.7 | 0.2 | (43) | (3.9) | 1,770 |
| LEGACY INVESTMENT GRADE | A+ | 0.5 | 0.1 | (0.5) | 0.9 | 1.0 | 77 | 0.5 | 750 |
| GOVERNMENT CREDIT BENCHMARK | AA- | 0.2 | 0.0 | (0.1) | 0.3 | 0.3 | 1.0 | (0.9) | 678 |
| HIGH YIELD BENCHMARK | B+ | 4.0 | 1.2 | 2.6 | 0.2 | 8.5 | 382 | 4.0 | 708 |
| LOOMIS HIGH YIELD | B+ | (0.2) | (0.0) | (0.2) | 0.0 | (0.0) | 23.0 | (0.2) | 668 |

1. Aladdin Risk Management System; PERS
2. Excludes convexity and volatility

FIXED INCOME RETURN ATTRIBUTION (12/31/22)

| | POLICY WEIGHT | 1 YR PORTFOLIO RETURN | 1 YR FI POLICY RETURN | 1 YR ACTIVE RETURN | 5 YR PORTFOLIO RETURN | 5 YR FI POLICY RETURN | 5 YR ACTIVE RETURN |
|---|----------------|-----------------------|-----------------------|--------------------|-----------------------|-----------------------|--------------------|
| PERS FIXED INCOME | 23.0% | 2.20% | -12.40% | 14.60% | 2.20% | 0.93% | 1.27% |
| INVESTMENT GRADE FIXED INCOME | 69.6% | -13.99% | -13.01% | -0.98% | 0.70% | 0.02% | 0.68% |
| Bloomberg Aggregate | | | | | | | |
| PRUDENTIAL CORE FIXED INCOME* | 24.2% | -13.79% | -13.01% | -0.78% | 0.68% | 0.46% | 0.22% |
| PIMCO CORE PLUS | 24.2% | -13.74% | -13.01% | -0.73% | 0.33% | 0.02% | 0.31% |
| PIMCO DISCO II | 5.9% | -0.28% | -13.01% | 12.73% | 4.76% | 0.02% | 4.74% |
| STATE STREET LONG UST INDEX | 7.0% | -29.58% | -13.01% | -16.57% | -2.26% | 0.02% | -2.28% |
| MANULIFE TOTAL RETURN BOND FUND | 8.3% | -6.88% | -13.01% | 6.13% | 2.11% | 0.02% | 2.09% |
| <i>*Prudential 5-year returns are since inception (03/2018)</i> | | | | | | | |
| BELOW IG FIXED INCOME | 30.4% | -0.21% | -11.18% | 10.97% | 5.23% | 2.30% | 2.93% |
| Bloomberg High Yield 2% Issuer Constrained | | | | | | | |
| ARES ND CREDIT STRATEGIES | 10.6% | 7.79% | -11.18% | 18.97% | 7.65% | 2.30% | 5.35% |
| CERBERUS ND PRIVATE CREDIT FUND | 11.5% | 6.89% | -11.18% | 18.07% | 9.19% | 2.30% | 6.89% |
| LOOMIS SAYLES HIGH YIELD | 8.0% | -12.44% | -11.18% | -1.25% | 1.46% | 2.30% | -0.84% |
| PIMCO BRAVO II | 0.4% | -26.04% | -11.18% | -14.86% | -2.58% | 2.30% | -4.88% |
| LEGACY FUND FIXED INCOME | 35.0% | -11.91% | -13.01% | 1.10% | 1.20% | 0.02% | 1.18% |
| INVESTMENT GRADE FIXED INCOME | 100.00% | -11.91% | -13.01% | 1.10% | 1.20% | 0.02% | 1.18% |
| Bloomberg Aggregate | | | | | | | |
| WESTERN ASSET CORE FIXED INCOME | 25.3% | -15.90% | -13.01% | -2.89% | -0.10% | 0.02% | -0.12% |
| PRUDENTIAL CORE PLUS FIXED INCOME | 25.3% | -14.58% | -13.01% | -1.57% | 0.50% | 0.02% | 0.48% |
| ALLSPRING US CORPORATE PLUS | 8.0% | -16.34% | -13.01% | -3.33% | 1.52% | 0.02% | 1.50% |



FIXED INCOME TRANSITION UPDATE

INVESTMENT STAFF
MARCH 10, 2023

NORTH
Dakota
Be Legendary.

Retirement & Investment

EXECUTIVE SUMMARY

- THE OBJECTIVE OF THE TRANSITION IS TO HARMONIZE THE INVESTMENT GRADE PORTFOLIOS ACROSS POOLS
- COMPLEX TRANSITION: REDUCE TRANSACTION COSTS USING INTER-POOL TRANSFERS AND CROSSING
- HIRED STATE STREET GLOBAL MARKETS AS TRANSITION MANAGER
- BEGAN IN JANUARY 2023: INITIATED REDEMPTIONS FROM SOME COMMINGLED FUNDS
- TRANSITION BEGAN IN EARNEST ON MARCH 6TH—EXPECTED TO BE LARGELY COMPLETED ON APRIL 1ST

A CONSISTENT INVESTMENT GRADE SUB-ALLOCATION - MANAGERS

| | PERS CURRENT IG ALLOCATION | WSI CURRENT IG ALLOCATION | LEGACY FUND CURRENT IG ALLOCATION | NEW IG ALLOCATION PERS AND WSI | NEW IG ALLOCATION LEGACY |
|---------------------------------------|----------------------------------|------------------------------|--------------------------------------|--------------------------------------|--------------------------------|
| CORE FIXED INCOME | 71.4% | 67.3% | 57.6% | 74.2% | 74.2% |
| 1 PRUDENTIAL CORE FIXED INCOME | 35.9% | | | 24.7% | 24.7% |
| PRUDENTIAL CORE PLUS FIXED INCOME | | 26.8% | 28.8% | | |
| PIMCO CORE PLUS CONSTRAINED | 35.5% | 14.4% | 0.0% | 24.7% | 24.7% |
| WESTERN ASSET U.S. CORE FIXED INCOME | | 26.1% | 28.8% | 24.7% | 24.7% |
| 2 SHORT DURATION SECURITIZED | 11.4% | 7.4% | 6.9% | 0.0% | 0.0% |
| MANULIFE TOTAL RETURN BOND FUND | 11.4% | 7.4% | 6.9% | 0.0% | 0.0% |
| 2 LONG TREASURIES | 8.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| SSGA LONG U.S. TREASURY INDEX NL FUND | 8.0% | | | 0.0% | 0.0% |
| IG GOV/CREDIT | 0.0% | 13.7% | 17.6% | 0.0% | 0.0% |
| SSGA U.S. GOVT CREDIT BOND INDEX | 3 0.0% | 13.7% | 17.6% | 0.0% | 0.0% |
| IG GOV | 0.0% | 0.0% | 7.0% | 11.0% | 11.0% |
| SSGA GOV INDEX | 3 0.0% | | | 11.0% | 4.0% |
| BANK OF ND MATCH LOAN CDS | | | 7.0% | 0.0% | 7.0% |
| IG CREDIT | 0.0% | 8.3% | 8.7% | 11.0% | 11.0% |
| ALLSPRING MEDIUM QUALITY CREDIT | 3 0.0% | 8.3% | 8.7% | 8.0% | 8.0% |
| SSGA CREDIT INDEX | | | | 3.0% | 3.0% |
| OPPORTUNISTIC | 9.2% | 3.3% | 2.1% | 3.8% | 3.8% |
| PIMCO DISCO II | 9.2% | 3.3% | 2.1% | 3.8% | 3.8% |
| TOTAL | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |

INVESTMENT GRADE FIXED INCOME

IMPLEMENT A CONSISTENT IG ALLOCATION

- 1 CREATE A CONSISTENT *CORE FIXED INCOME* SUB-ALLOCATION
- 2 TERMINATE MANULIFE AND THE LONG TREASURY FUND
- 3 BREAK UP *IG GOV/CREDIT* INTO *IG GOV* AND *IG CREDIT*. ADD ALLSPRING TO PENSION. BND CDS OFFSETS GOV EXPOSURE
- 4 CREATE *OPPORTUNISTIC* SUB-ALLOCATION

FIXED INCOME TRANSITION TRANSACTIONS

| | PENSION POOL (\$ MILLION) | INSURANCE POOL (\$ MILLION) | LEGACY FUND (\$ MILLION) | TOTAL (\$ MILLION) |
|------------------|--------------------------------------|--|-------------------------------------|-------------------------------|
| SALES | -523 | -629 | -1,561 | -2,713 |
| PURCHASES | 523 | 629 | 1,561 | 2,713 |

- COMPLEXITY REQUIRES FINANCE, INVESTMENTS, NORTHERN TRUST AND SSGM TO ENSURE TRADES AND SETTLEMENTS ARE EXECUTED ACCURATELY AND TIMELY
- INTER-POOL TRANSFERS: \$300 MILLION (NO TRANSACTION COSTS)
- CROSS TRADES: \$737 MILLION (NO/REDUCED TRANSACTION COSTS)
- INVESTMENT GUIDELINE CHANGES: \$978 MILLION (REDUCED TRANSACTION COSTS)
- TRANSITION PORTFOLIO WITH SSGM: \$715 MILLION (COMMISSIONS & TRANSACTION COSTS)
- IN TOTAL ~\$2.0 BILLION OF TRANSACTIONS WITH NO OR REDUCED TRANSACTION COSTS

NEXT STEPS

- COMPLETE TRANSITION ON APRIL 1st—RECONCILE AND TRUE UP IN APRIL
- POST TRADE REVIEW OF TRANSITION WITH SSGM
- STAFF WILL CONTINUE PORTFOLIO ANALYSIS ACROSS ASSET CLASSES
- BEGIN WORK ON IG FIXED INCOME PORTFOLIO 2.0



INVESTMENT CONTENT

INVESTMENT STAFF
MARCH 10, 2023

NORTH
Dakota
Be Legendary.

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TYPICAL INVESTMENT COMMITTEE CONTENT



ONCE
PER YEAR

- OBJECTIVES
- PHILOSOPHY
- METHODOLOGIES
- ORGANIZATION
- TOOLS AND MODELS
- CAPABILITY DEVELOPMENT
- PERFORMANCE TARGETS
- FINANCIAL CHARACTERISTICS
- INSTRUMENTS



~THREE
TIMES
PER YEAR

- ABSOLUTE RISK AND PERFORMANCE
- ACTIVE RETURN/RISK ATTRIBUTION
- CONTRIBUTION TO FUND PERFORMANCE
- CHANGES IN TEAM/OWNERSHIP
- COMPLIANCE
- GUIDELINE CHANGES
- NEW PROGRAMS/MANDATES/STRATEGIES
- ASSET ALLOCATIONS
- TRANSITIONS
- MARKET ENVIRONMENT
- APPROVALS FOR NEW IMPLEMENTATIONS

PROPOSED TYPICAL INVESTMENT COMMITTEE AGENDA

OPEN SESSION

APPROVAL OF MINUTES

STANDARD BUSINESS

REVIEW AN INVESTMENT CLASS, ASSET ALLOCATION OR STRATEGY

CLOSED SESSION*

CLOSED SESSION ACTIVITIES

RECONVENE IN OPEN SESSION

RISK DISCUSSION

FUTURE MEETING TOPICS

MOTION TO ADJORN



2023 BILLS IMPACTING INVESTMENTS

Scott M Anderson, CFA

March 10, 2023

NORTH
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Retirement & Investment

2023 BILLS IMPACTING INVESTMENTS

BILL

TOPIC

IMPACT

HB1039

CLOSING PERS DB PLAN EFFECTIVE
12/31/23

CHANGE OF ASSET ALLOCATION, CHANGE OF COST AND
STRATEGY

HB1040

CLOSING PERS DB PLAN EFFECTIVE
12/31/24

CHANGE OF ASSET ALLOCATION, CHANGE OF COST AND
STRATEGY

HB1088

SIB MEMBERSHIP CHANGES

CHANGE OF GOVERNANCE TO BETTER REFLECT CLIENT
COMPOSITION AND NEED FOR BOARD LEVEL EXPERTISE

2023 BILLS IMPACTING INVESTMENTS

| BILL | TOPIC | IMPACT |
|--------|---|---|
| HB1227 | BUSINESS CASE FOR POLICY CHANGES IN LEGACY FUND | RIO MUST HIRE AN INDEPENDENT CONSULTANT TO PROVIDE A BUSINESS CASE |
| HB1278 | CONTRACTED SUPPORT FOR FOSSIL FUELS AND AG | COST TO MONITOR AND POTENTIAL LOSS OF VENDOR RELATIONSHIPS |
| HB1345 | REQUIRES PUBLIC SUPPORT OF FOSSIL FUEL AND AG INDUSTRIES | COST TO IMPLEMENT, POTENTIAL LOSS OF VENDOR RELATIONSHIPS |
| HB1368 | PROHIBITING INVESTMENTS WITH AND CONTRACTS WITH FIRMS THAT BOYCOTT ISRAEL | EXISTING LEGISLATION COVERS CONCERN, COST TO MONITOR AND POTENTIAL LOSS OF VENDOR RELATIONSHIPS |
| HB1429 | ESG BOYCOTT CONTRACT RESTRICTIONS, SIB LIST | COST TO MONITOR AND POTENTIAL LOSS OF VENDOR RELATIONSHIPS |

2023 BILLS IMPACTING INVESTMENTS

BILL

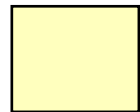
TOPIC

IMPACT

SB2330

7% PERCENT OF MARKET VALUE
DEFINITION OF EARNINGS/BIENNIUM,
ELIMINATES INFRASTRUCTURE PROGRAM,
REDUCES INSTATE EQUITY INVESTMENT

INCREASED FUND RETURNS, MORE PREDICTABLE AND
CONSISTENT EARNINGS FROM FUND, BETTER FUND
LIQUIDITY



ESG BILLS